A List of Bombycidae, Endromididae, Saturniidae, Lemoniidae and Brahmaeidae of Georgia and neighbouring countries

(Lepidoptera)

by
Vadim V. Zolotuhin, Eteri A. Didmanidze & Valery A. Petrov
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Abstract: 1 species of Bombycidae, 1 of Endromididae, 7 of Saturniidae, 5 of Lemoniidae and 1 of Brahmaeidae are recorded here from the territory of Georgia and neighbouring countries. Short bionomics data are given for all species. A lectotype is designated for *Saturnia cephalariae* Christoph, 1885 based on a 9 from Kasikoporan kept in ZISP. *Lemonia ponticus* Aurivillius, 1894 stat. nov. is considered as a distinct species. The subspecific belonging of some species is discussed.

Typical specimens are figured for most species described from the Caucasus, and distributional maps are given for most species.

Zusammenfassung: Eine Art der Bombycidae, eine Endromididae, sieben Saturniidae, fünf Lemoniidae und eine Brahmaeidae werden für Georgin und angrenzenden Ländern nachgewiesen. Kurze Angaben zur Biologie werden für alle Arten angegeben. Von Saturnia cephalariae Снязторн, 1885, wird ein Lectotypus designiert, ein \circ , aus ZISP. Lemonia ponticus Aurivillius, 1894 stat. nov. wird hier als gute Art betrachtet. Die subspezifische Gliederung für einige Arten wird diskutiert. Typische Arten für den Kaukasus werden abgebildet sowie Verbreitungskarten für die meisten Arten.

The article continues the series of publications started in Entomofauna (Didmanidze & Yakovlev, 2007; Zolotuhin & Didmanidze, 2009) and has as its aim to compile the available information on the distribution of some families of so-called Bombyces and Sphinges in Georgia and adjoining areas of Transcaucasus. This article is devoted to Bombycidae, Saturniidae, Brahmaeidae, Endromididae, and Lemoniidae; an article on Sphingidae is currently in preparation.

Available literature analysis was already given by Didmanidze & Yakovlev, 2007. It should be noted here that some works were devoted especially to the study of the families listed in Georgia and Transcaucasus. The start for the investigations was made by Kolenati (1846) and Great Duke Nikolay M. Romanov (Romanoff, 1884, 1885). They were continued in the 20th Century by Sheljuzhko (1943), Miljanovsky (1957-1971), Shengelia (1941, 1964-1966), Didmanidze (1969-2005), and Didmanidze & Sikharulidze (1974). We can find some notes on the species collected in Georgia in the works of de Freina (1979), Daniel (1959), and Wojtusjak & Niesiołowski (1947). Most useful works on Transcaucasus were published for Armenia by Gevorkjan (1986) and Mirzojan (1977); for Azerbajan, by Effendi (1968).

Since that time, more material is available for study from Russian collections and especially from the SIMON JANASHIA Museum of Georgia. At present, 1 species of the Bombycidae, 1 Endromididae, 6 (7) Saturniidae, 1 Brahmaeidae, and 5 Lemoniidae are known from the region under consideration and it is highly probable that the specific composition is completely known.

The main part of the material studied is kept in the collection of Simon Janashia National Museum of Georgia (Tbilisi), but also in the Zoological Institute of Russian Academy of Science (St. Petersburg) and Zoological Museum of Kiev State University. Some specimens are known from other museums. All are mentioned and the following abbreviations used in the text:

GNMT: Georgian National SIMON JANASHIA Museum, Tbilisi;

MWM: Museum Thomas J. Witt, Munich;

ZISP: Zoological Institute of Russian Academy of Science, St. Petersburg;

ZMHU: Zoologisches Museum der Humboldt Universität, Berlin;

ZMKU: Zoological Museum of Kiev State University;

ZSM: Zoologische Staatssammlung, Munich.

Distributional maps are given for all species known from the Caucasus, not only Georgia.

An annotated check-list Bombycidae

Bombyx Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 495.

Type-species: *Phalaena Bombyx mori* Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 499, by subsequent designation by the International Commission on Zoological Nomenclature (1957), Opin. Decl. int. Commn zool. Nom. 15 (Opinion 450): 254.

Bombyx mori (LINNAEUS, 1758)

Phalaena Bombyx mori Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 499. Locus typus: "Habitat in Chinae, hodie culta per Europam". Types: LSL [examined].

References: KOLENATI (1846: 98).

Range: this strongly semi-domesticated species is not known from the wild and is bound in its distribution with Man and hostplant. Originally known from China, now it is widely distributed through the subtropics and tropics of the entire World.

Tbilisi, 3.VI.1948 (GNMT).

Endromiidae

Endromis Ochsenheimer, 1810, Schmett, Eur. 3: 15.

Type-species: Phalaena Bombyx versicolora Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 499, by monotypy.

Endromis versicolora (LINNAEUS, 1758) (col. pl. 1: 1-4)

Phalaena Bombyx versicolora Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 499. Type locality: "Europa". Types: LSL.

Endromis versicolora eichleri Alberti, 1975 (col. pl. 1:1

Ent. Z. 85(8): 88. Type locality: "Nordwestkaukasus, Dombai, 2000 m". Holotype ♂ (by monotypy) (ZSM) [examined].

References: Miljanovsky (1964: 125), Alberti (1975: 85), Mirzojan (1982: 92), Gevorkjan (1986: 686) Nässig & Czipka (1994: 183-197), Didmanidze 2005: 30.

Range (map 1): From Spain to Far East of Russia and Sakhalin, but absent from Central Asian Mts. The species is known also from north-eastern Turkey, Transcaucasus and Caucasus as *E. v. eichleri* Alberti; a subspecific position of the Kuban population is not clear, but the ground colour of the hind wings is also lightened to rose-coloured (V. Stchurov, pers. comm.).

Comments: The subspecies is characterized by yellowish hind wings; both sexes in the Turkish population are active in twilight and not attracted to light, contrary the European subspecies. The most useful bionomic information is given for the region by DIDMANIDZE (2005: 30): «In Georgia the butterfly is very rare. We have found it in Colchic forest of Kintrishi Reserve (Ajara), where the endemic relic Medula medula medula medula medula is found and in surroundings of vil. Kurbu (Samegrelo), where the endemic to West Georgia - Megrelic Birch (*B. megrelica*) grows. In the collection of the museum are several specimens of this species from Borjomy conyon (East Georgia) preserved. Here, in subalpine forest together with White Birch (*B. litwinowii*), the Black Birch (*B. raddeana*) is found as well. Here grows also the relic of Tertiary origin and endemic to Caucasus - the Georgian hazelnut (*Corylus colchica*). Leaves of this plants nourishs the caterpillars». The subspecies *E. v. eichleri* Alberti is also known from southern Armenia (Razdan and Marmaric) and from NE Turkey (Prov. Rize). For Abkhasia (Akarmara, about 40 km from the coast), Miljanovsky (1964: 125) lists *Tilia*, *Fagus*, *Quercus* or *Carpinus* to be host plants because *Betula* is absent from the location. Both subspecies are univoltine, are on the wing from late March to June and inhabit higher altitudes on Caucasus. Subspecific attribution is not quite clear for the Georgian populations. In spite of the fact that the typical of of *E. v. eichleri* Alberti is really similar in appearance to Turkish populations due to very light hind wings, all other examined specimens have hind wings only slightly lighter than in European moths.

Material: Holotype ♂ of *Endromis versicolora eichleri* Alberti, 1975, Nordwestkaukasus, Dombai, 2000 m, Hotel, UV-Lux, 3.-5.VI.1974, leg. F. Eichler (ZSM); Borshom, 1 ♂, 3.V.1900; 1 ♂, 29.III.1901; 1 ♂, 1 ♀, 2.-18.IV.1902, coll. Romanoff (GNMT); 1 ♀, Transcaucasus, Borshom, 25.V.1911, leg. Vinogradov (GNMT); 1 ♂, 1 ♀, Meshikedi, Kintrishi, Adjaria, 17.-21.VI.1974, leg. E. Didmanidze (GNMT); 2 ♂♂, 1 ♀, Meshikedi, Kintrishi, Adjaria, 2.VII.1974, leg. E. Didmanidze (GNMT); 2 ex., Caucasus, Svanetia, vic. Lentechi, 28.V.1978, leg. E. Didmanidze (GNMT); 7 ♂♂, 5 ♀, South Ossetia, Tzkhinval Distr., Auriskhevi, 26.VI.1985, leg. E. Didmanidze (GNMT).

Saturniidae

Aglia Ochsenheimer, 1810, Schmett. Eur. 3: 15.

Type-species: Phalaena Bombyx tau LINNAEUS, 1758, Syst. Nat. (Edn 10) 1: 497, by monotypy.

Aglia tau (LINNAEUS, 1758)

Phalaena Bombyx tau Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 497. Type locality: originally not stated [Europa]. Types: ?LSL. References: Nässig (1981: 4).

Range: From Eastern Spain to Siberia, Mongolia and Russian Far East. In Caucasian Range is known only from Ciscaucasus. Also is known from northern Iran - Elburs Mts. (Prov. Gilan and Mazanderan: Nässig, 1981: 4); no material from Great Caucasus or Transcaucasus is reliably known so far, although the species should be found there.

Samia HÜBNER, [1819] 1816, Verz. bekannter Schmett.: 156.

Type-species: *Phalaena Attacus cynthia* DRURY, 173, Illustr. Nat. Hist. exot. Insects **2**: 10, Index [1], pl. 6:. 2, by subsequent designation by GROTE (1865), Proc. Ent. Soc. Philad. **5**: 228.

Samia cynthia (DRURY, 1773) (col. pl. 1: 6)

Phalaena Attacus Cynthia Drury, 173, Illustr. Nat. Hist. exot. Insects 2: 10, Index [1], pl. 6: 2. Type-locality: China. Lectotype of (designated by Peigler & Naumann, 2002: 76) (Macleay Museum, University of Sydney, Australia).

References: Stolyarov & Goderdzishvili (1991: 52; Phylosamia cynthia); Peigler & Naumann (2002: 91).

Range (Map 2): This originally south-eastern Asiatic species was introduced in NW Georgia in ca. 1860 to obtain silk and established there a local population (see Peigler & Naumann, 2002: 91). But it was not reported from Abkhasia until a century later, and only in 1991 it was rediscovered in Southern Abkhasia (Gali District) occasionally as a temporary settler. Similar local temporal settlements are known also from Western Europe (Spain, France, Italy, Switzerland; formerly also in Turkmenistan and Uzbekistan). In Abkhasia, the species was observed on *Ailanthus glandilosa*. Nothing is known about the present status of the population of this species. Formerly, it was cultivated to obtain silk in Kutaisi and Lagodekhi in the mid 20th Century.

Comments: The species mostly accepts *Ailanthus glandulosa* as a hostplant, but in captivity caterpillars can be easily reared on *Ligustrum* and *Sambucus*; other plants (*Juglans*, *Prunus*, *Ricinus*) are not always accepted. The genus *Samia* Hübner was recently revised (Peigler & Naumann, 2002) and was divided into many species; but a Georgian population was attributed by Naumann to *S. cynthia* Drury (pers. comm. from 22.III.2009). No material in our disposal. Overwintering stage for Abkhasian population not known.

Material: Cocoons, Tsulukidze, 30.X.1939, leg. Kvitsaridze (GNMT); 2 ♂♂, Tsulukidze, 13.-15.VI.1940, leg. A. Vashakidze (GNMT).

Neoris Moore, 1862, Trans. Ent. Soc. London (3) 1 (4): 321.

Type-species: Neoris huttoni Moore, 1862, Trans. ent. Soc. London (3) 1 (4): 321, by monotypy.

Neoris huttoni Moore, 1862

Trans. Ent. Soc. London (3) 1 (4): 321. Type locality: India [NW], Mussooree. Types: ♂ (BMNH).

Neoris huttoni naessigi DE FREINA, 1992, Ent. Z. **102** (13): 245, figs 1, 4, 5-8. Type locality: Kleinasien, Prov. Erzincan, 30 km SE Ovacik, oberes Munzur-Tal, 1300 m. Holotypus ♂ (by original designation) (MWM).

References: Mirzojan (1982: 86, Neoris galerope Püngl.).

Range (map 3): As a different subspecies, known from NW India, Afghanistan, northern Iran, mountains of Central Asia up to

western China and western Mongolia; recently was found in Transcaucasus (Talysh and Armenia) and in Turkey.

Comments: This species is known from the higher altitudes of about 1300-1700 m, and in Turkey it is on the wing in October. Moths are cold-resistant and in Middle Asia often fly in falling snow (V. Zolotuhin, pers. obs.). Different broad-leaved trees and bushes are host plants, mostly *Pistacea* in Turkey; the caterpillars are common on wild *Malus, Prunus, Armeniaca, Crataegus, Acer* (pers. obs.) in Central Asia. Eggs are the hibernating stage. Caucasian population seems to be attributed to *N. h. naessigi* DE FREINA, 1992.

Material: 1 °, Armenia, Megri, 2.X.1963, leg. Azarjan (BIN); 1 °, Armenia turcica, Bajburt, 1916 (ZMKU).

Saturnia Schrank, 1802, Fauna Boica 2 (2): 149.

Type-species: *Bombyx pyri* [Denis & Schiffermüller], 1775, Ankündung syst. Werkes Schmett. Wienergegend: 49, by subsequent designation by Grote (1895), Can. Ent. 27: 267, but cited as "*S. pavonia major*".

Saturnia pyri ([Denis & Schiffermüller], 1775)

Bombyx pyri [Denis & Schiffermüller], 1775, Ankündung syst. Werkes Schmett. Wienergegend: 49. Type locality: [Austria] Vienna. Types: lost. References: Koleanti (1846: 99), Romanoff (1885: 13), Radde (1899: 425) Miljanovsky (1947, 1964: 126); Mirzojan (1977: 252), De Freina (1981: 21, 22), Didmanidze (1971: 516, 1973: 101, 1974: 216, 1976: 164; 1978: 83; 1981a: 159, 1987a: 227), Didmanidze & Kvavadze (2006: 102), Gevorkjan (1986: 686).

Range (map 4): From Portugal to Austria, Balkans, Ukraine and southern Russia to Lower Volga; Turkey, Israel, Syria, Iran, Iraq, everywhere in Caucasus.

Comments: This species is known from lowland to mid altitudes and is on the wing from May to July, according to elevation; pupae sometimes hibernate twice. *Malus, Pyrus, Prunus, Armeniaca, Cerasus, Ulmus, Juglans regia, Salix* are hostplants. MILJANOVSKY (1947, 1964) recorded the species in Abkhasia also from *Prunus divaricata, Cerasus avium, Fraxinus, Alnus, Pterocarya, Liquidambar*. Sometimes, it is a pest in gardens and plantations, on young plants.

Material: 1 ♂, UdSSR, Schwarzmeer Küste, Sotschi, 1.-7.VII.1967, leg. G. ELZE (MWM); 2 ♂♂, 1 ♀, Azerbajan, Talysh, 12 km N Lenkoran, 350 m, Aurora, V 1992 (MWM); 19, Daralagez, 900 m, Buzgov, 13.V.1982, Gorbunov & Kholina leg. (MWM); 2 of Gegechkory, rus. Salkhino, 24.-26.VI.1962, leg. E. DIDMANIDZE (GNMT); 1 & Gegechkory, 26.VI.1962, leg. DIDMANIDZE (GNMT); 1 9, Gegechkory, pg. Thamakoni, 21.VI.1962, leg. E. DIDMANIDZE (GNMT); 1 o, Ingur-hess, maltitudo Phozcho, 2.VI.1974, leg. E. Washakidze (GNMT); 1 ♂, Zugdidi, Samegrelo, 7.VI.1968, leg. E. Didmanidze (GNMT); 1 ♀, Shida-Kartli, Tskhinvali, 1.VII.1933 (GNMT); 1 °, Thamarasheni, VII 1914, leg. N. Boskvilon (GNMT); 1 °, Thamarasheni, d. Gori, 14.VII.1905, leg. Winogradov-Nikitin (GNMT); 1 ♂, Thamarasheni, d. Gori, 14.VII.1942, leg. A. Washakidze (GNMT); 1 ♀, Shida-Kartli, Mtskheta, 28.V.1910, leg. Winogradov-Nikitin (GNMT); 19, Mtskheta, V 1910, leg. Winogradov-Nikitin (GNMT); 10, Shida-Kartli, Tiflisi, 18.VI.1896, coll. Romanoff (GNMT); 1 J., Tiflisi, 1888, coll. Romanoff (GNMT); 2 JJ, Tiflisi, 17.V.1900, leg. KOENIG (GNMT); 3 of Tiflisi, 6.-18.V.1906, leg. Shelkovnikov (GNMT); 1 of Tiflisi, 25.IV.1908, leg. Shelkovnikov (GNMT); 1 9, Tiflisi, 18.VI.1910, leg. Rostombekov (GNMT); 1 9, Tiflisi, 15.IV.1915, leg. A.Wasilinin (GNMT); 1 °, Tiflisi, IV 1920, leg. RIMENZON (GNMT); 1 °, Tiflisi, 26.VI.1918, leg. RIMENZON (GNMT); 1 °, Tiflisi, V 1929, leg. Rostombekov (GNMT); 1 °, Tiflisi, VI 1931, leg. A. Washakidze (GNMT); 2 od, Tiflisi, Khudadovi, V 1938, leg. A. Washakidze (GNMT); 1 o, 1 o, Tiflisi, 9.VI.1940, leg. Gogilashvilli (GNMT); 1 &, Tiflisi, northern botanic garden, V 1941, leg. Imerlishvilli (GNMT); 3 &&, Tiflisi, 10.VI.1945, leg. A. Washakidze (GNMT); 1 o', Tiflisi, V 1946, leg. A. Washakidze (GNMT); 1 o', Tiflisi, 10.VI.1945, leg. A. Washakidze (GNMT); 2 or, Tiflisi, V 1946, leg. A. Washakidze (GNMT); 1 or, Tiflisi, northern botanic garden, V 1947, leg. IMERLISHVILI (GNMT); 1 °, Tiflisi, V 1966, Vardisubani expedition (GNMT); 1 °, Borjom-Charagauli, Borshom, 21. V.1900, coll. Romanoff (GNMT); 1 °, 1 °, Borshom, 15.IV.1901, leg. Shelkovnikov (GNMT); 1 °, Borshom, 24.V 1900, coll. Romanoff (GNMT); 1 ♂, Borshom, 7.IV.1900, leg. Shelkovnikov (GNMT); 2 ♂♂, Borshom, 8.V.1901, leg. Shelkovnikov (GNMT); 1 ♂ Achaltsiche-Djavachetia, 1.VI.1964, leg. E. Didmanidze (GNMT); 1 o, Djavachetia, Aspindza, 27.V.1973, leg. E. Didmanidze (GNMT); 2 o o, Aspindza, Meskhetia, 28.V.1956, leg. KIKODZE (GNMT); 1 ♂, Kakhetia, Tsiteli tskaro (Dedoflistskaro), 12.VI.1953, leg. CHINTS-HALADZE (GNMT); 1 °, Azerbajan, Elisavetpol (Gandja), 13.V.1910, leg. WASILININ (GNMT); 1 °, Azerbajan, Elisavetpol Cauc., Lurnabad, 20.V.1906, leg. L. Sereidovich (GNMT); 19, Azerbajan, Elisavetpol Cauc., 13.V 1910, leg. A. Washakidze (GNMT); 19, Azerbajan, Geok-tapa Cauc., 1910, leg. A. Shelkovnikov (GNMT); 7 or, 19, Azerbajan, Turianchaj Reserve, 22.-23.IV.1972, leg. E. Didmanidze (GNMT); 1 °, Azerbajan, Elisavetpol, 13.V.1910, leg. A. Shelkovnikov (GNMT); 1 °, Azerbajan, Zuernabad, Elisavetpol, 20.V.1906, leg. L. Sereidovich (GNMT); 1 ♂, 1 ♀, Armenia, Khosrov Reserve, 23.V 1979, leg. E. Didmanidze (GNMT).

Pavonia HÜBNER, [1819], Verz. bekannter Schmett.: 157.

Type-species: *Bombyx carpini* [Denis & Schiffermüller], 1775, Ankündung syst. Werkes Schmett. Wienergegend: 50, by subsequent designation by Ferguson (1972), Moths Am. N. of Mexico **20** (2B): 176.

= Eudia Jordan, 1911, Groß-Schmett. Erde 2: 222. Type-species: *Phalaena Bombyx pavonia* Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 495, by original designation.

Pavonia pavonia (LINNAEUS, 1758) (col. pl. 1:7)

Phalaena Bombyx pavonia Linnaeus, 1758, Syst. Nat. (Edn 10) 1: 496. Type-locality: originally not stated [Europe]. Types: ??

= Eudia pavonia meridionalis natio abchasica Sheljuzhko, 1943, Z. Wien. Ent. Ges. 28: 267, pl. 17: 5 (infrasubspecific). Typelocality: Abchasia, Suchum-Kale. Holotype ♂ (ZMKU) [examined].

References: Romanoff (1885: 19, *Saturnia*), Radde (1899: 425), Sheljuzhko (1943: 268, *Eudia*), Miljanovsky (1964: 127, *Saturnia*), Didmanidze (1975: 309, 2005: 12, *Eudea* [sic] *pavonia*), Didmanidze & al. (2002: 7); Didmanidze & Kvavadze (2006: 100), Gevorkjan (1986: 686, *Eudia*).

Range (map 5): From eastern Spain through Europe (but now a population of southern Europe and Turkey is considered as a separate species *P. pavoniella* Scoploli, 1763) to Siberia, Mongolia, Russian Far East. Taxonomic status of Caucasian population is not quite clear; seems to be *E. pavonia* (L.) as well; Sheljuzhko pointed it out as ssp. *meridionalis* Calberla, 1888 also from "Berg Mashuk bei Pjatigorsk ... und am Flusse Kitsh-Malka".

Comments: In Georgia, the species is very rare. It inhabits broad-leaved and mixed forests, preferring open places, edges of forests, flood-lands and shrub thickets. The species develops one generation per year and moths can be observed in Georgia in April-May. Two ecological forms can be separated here - a plain one and a mountain one. The first feeds mainly on blackthorn and the second

on bilberries (*Vaccinium*). The species is also known on Caucasus on *Frangula*, *Quercus*, *Betula*; Romanoff (1885: 19) listed it also on *Rubus* ("sur des framboisiers") in Tbilisi and on *Spiraea* in Darachichag (Armenia). In Abkhasia the species was observed on *Rosa*, *Carpinus* and *Rubus caesius* (MILJANOVSKY, 196: 127); the taxon *abchasica* introduced by Sheljuzhko is infrasubspecific.

Material: Holotype ♂ of *Eudia pavonia meridionalis* natio *abchasica* Sheljuzhko, 1943, Abchasia, Suchum, IV 1939, leg. Miljanovskij (ZMKU); 14♂♂, paratypes, same (ZMKU); 1♂, 1♀, Kaussari Bacon, 5.V.1907, coll. Romanoff (GNMT); 1♂, 1♀, Kaussari Bacon, 31.I.1897, coll. Romanoff (GNMT); 1♂, Cocoon, Manglis, 15.III.1930, leg. Rostombekov (GNMT); 1♀, Lagodekhi Reserve, 4.IV.1958, E. Didmanidze (GNMT); 1♀, Georgia, Babaneuri Reserve, Nigoetis Khevi, 16.IV.1984, leg. E. Didmanidze (GNMT); 1♀, Georgia, Atskuri, 6.VII.1964, leg. E. Didmanidze (GNMT); 1♂, Ciscaucasia, ms. Mashuk (prope Pjatigorsk), 26.IV.1923 (ZMKU); 1♂, Ciscaucasia, fl. Kitsh-Malka, 5.V.1929 (ZMKU).

Pavonia spini ([Denis & Schiffermüller], 1775 [1776])

Bombyx spini [Denis & Schiffermüller], 1775 [1776], Ankündung syst. Werkes Schmett. Wienergegend: 49. Type locality: [Austria] Vienna. Types: lost.

References: Romanoff (1885: 14), Mirzojan (1977: 252), Gevorkjan (1986: 686).

Range (map 6): From Balkans and Turkey to Ukraine, Lower Volga, Southern Ural, Caucasus and Transcaucasus.

Comments: In Armenia (Gevorkjan, 1986: 686) the caterpillars feed on Prunus spinosa.

Material: 1 ♀, Borshom, 6.II.1897, coll. Romanoff (GNMT); 1 ♀, Borshom, coll. Romanoff (GNMT).

Pavonia cephalariae (CHRISTOPH, 1885) (col. pl. 1:8)

Saturnia Schrk. Cephalariae Christoph, 1885, Mém. Lep. 2: 14, pl. 14. Type locality: "c'est-à-dire à Kasikoporan, ... à l'ouest de l'Ararat et à quelques kilomètres de Koulp, connu par ses salines ... 7,000 p". Lectotype & (ZISP), here designated.

References: Romanoff (1885: 14), Radde (1899: 425), Mirzojan (1982: 87, Saturnia), Didmanidze (1978: 83; 2005: 13, Saturnia; 1981a: 159; 2005: 13), Didmanidze & al. (2002: 7).

Range (map 7): North-eastern Turkey, Transcaucasus, west of the Great Caucasus.

Comments: The species is endemic to the South Caucasian Mts. The typical habitats are mountainous steppes and rocky slopes at altitudes from 1600 up to 2500 m. The moths are on the wings from late April to late June. Caterpillars feed on *Cephalaria procera* (Asteraceae).

Taxonomic notes: The species was described after a series including moths of both sexes reared from caterpillars collected at high altitudes. Accordingly, the original description: [p. 14: "L'élévage des chenilles ne présentait aucune difficulté à l'endroit meme où ells furent trouvées, c'est-à-dire à Kasikoporan, petit village habité par des Kourdes (Jésides) et des Tatares, à l'ouest de l'Ararat et à quelques kilomètres de Koulp, connu par ses salines"]. One ♀ from a syntypic series in the ZISP is designated here as a lectotype. It bears the following labels: small white square with black frame and handwritten by black ink text "female Kasiko-poran", blue circle, and white rectangle with black frame and printed text "Кол. Вел. Кн. Николая Михайловича". The specimen is supplied with a red label printed "Lectotypus ♀ / Saturnia / cephalariae / Снязторн, 1885". All other specimens of the type series (in coll. ZISP) shall therefore be considered as paralectotypes and are also supplied with red labels with a corresponding text.

Material: Lectotype ♀ of *Saturnia cephalariae* Снязторн, Kasikoporan (ZISP); 2 ♂♂, 2 ♀, Armenia, Amasia, 2200 m, 18.V.2000, F. KAZARJAN lg. (MWM); 1 ♂, pag. Listves, Distr. Zangezur, 8.VII 1911, A. SATUNIN (GMNT); 3 ♂♂, 2 ♀, Armenia, ms. Ketendag (prope Suhoj Fontan), e. l. IV 1936 ТКАТSCHUKOV leg. (ZMKU); 1 ♂, same locality, 26.V1935, M. RJABOV (ZMKU); 6 ♂♂, same locality, 12.V 1937, 7000′, M. RJABOV (ZMKU); 1 ♂, Armenia, Leninakan, 10.V.1939 (lumine) (ZMKU).

Perisomena WALKER, 1855, List Specimens lepid. Insects Colln. Br. Mus. 5: 1199 (key).

Type-species: Saturnia caecigena Kupido, 1825, Neuentdecktes eur. Nacht-Pfauen-Auge. Saturnia caecigena Nro 4: 5, pl., figs 1-9, by subsequent designation by Kirby (1892), Synonymic Cat. Lepid. Heterocera 1: 775.

Perisomena caecigena (KUPIDO, 1825) (col. pl. 1:5)

Saturnia caecigena Kupido, 1825, Neuentdecktes eur. Nacht-Pfauen-Auge. Saturnia caecigena Nro 4: 5, pl., figs 1-9. Type-locality: [Croatia] [Rijeka] Fiume. Types: ??

Perisomena caecigena transcaucasica O. BANG-HAAS, 1927

Horae Macrolep. 1: 78. Type locality: Transkaukasus: Elisavethpol. Holotype ♂ (ZHUB).

References: Romanoff (1885: 19), Radde (1899: 425), Didmanidze (1978: 84, 2005: 12, *Perizomena coecigena*); Didmanidze & al. (2002: 7), Didmanidze & Kvavadze (2006: 101), Mirzojan (1977: 252, 1982: 86).

Range (Map 8): Northern Italy, Balkans, Cyprus, Asia Minor, Armenia, Georgia.

Comments: The species inhabits arid landscapes in Georgia and produces one generation per year, with flight of the moths in September-October. The caterpillars develop on different Atraphaxis species, mostly on A. caucasica. ROMANOFF (1885) listed the species from Helenendorf, Tiflis and Lischk with a note that "les chenilles sur les chénes" [Quercus].

Material: (Holo)type ♂ of *Perisomena caecigena transcaucasica* O. Bang-Haas, 1927, Kaukasus, Elisabethpol (ZHUB); 1 ♀, Kaukasus, Elisabethpol (ZHUB); 22 ex., Borshom, IX 1898, coll. Romanoff (GNMT); 5 ♂♂, Borshom, 15.-26.IX.1899, coll. Romanoff (GNMT); 1 ♂, Borshom, 19.-23.IX.1900, coll. Romanoff (GNMT); 2 ♂♂, Bakuriani, IX-X 1924, leg. S. Enikolopov (GNMT); 1 ♂, Borshom, 1903, leg. A. Shelkovnikov (GNMT); 1 ♂, 2 ♀♀, Borshom (Likani), forest cottage, 10.-13.IX.1924, leg. S. Enikolopov (GNMT); 3 ex., Tiflis, mountain forest, 12.-16.X.1922, leg. S. Enikolopov (GNMT); 2 ♂♂, Georgia, Saguramo, env. Tsitsamur, 17.III.1964, leg. E. Didmanidze (GNMT); 2 ♂♂, Azerbajan, Zurnabad, Elisavetpol (Gjandja), 10.X.1908, leg. A. Shelkovnikov (GNMT); 16 ex., Armenia. Khosrov Reserve, 1000 m, 10.-11.X.1974, leg. E. Didmanidze (GNMT); 1 ♂, Armenia, vill. Vern, 5.X 1974, leg. E. Didmanidze (GNMT); 3 ♂♂, 4 ♀♀, Armenia, Kotaiksky Distr., vill. Atsawan, 700 m, 18.-20.X.1999, leg. P. Kazarjan (MWM); 1 ♂, 1 ♀, Transcaucasus, Suram (Georgia), 17.IX.1911 (ZMKU); 1 ♂ Transcaucasus, Kikety (prope Tiflis), 19.IX.1914 S. Biljov (ZMKU).

Lemoniidae

Lemonia Hübner, [1820] 1816, Verz. Bekannt. Schmett.: 187.

Type-species: Bombyx taraxaci [Denis & Schiffermüller], 1775, Ankündung syst. Werkes Schmett. Wienergegend: 57, by monotypy.

Lemonia balcanica (Herrich-Schäffer, 1847) (col. pl. 1: 9-11)

Lasiocampa m. 32. Balcanica Friv. [sic!] in: Herrich-Schäffer, 1845, Syst. Bearb. Schmett. Eur. 2: 109, Spp. 26-28, 15-18. Type locality: «Vom Balkan». Types: ? not found.

Lemonia balcanica bremeri (Koleanti, 1846)

Gastropacha Bremeri Koleanti, 1846, Mel. Ent. 5: 98, pl. 18: 2. Type locality: [Georgia] "Somchetia, prope coloniam Elisabeththal". Holotype & by monotypy ("exemplar unicum in collectione Dni. Fricke inveni"), not found.

Lemonia balcanica anatolica WAGNER, 1931

Int. Ent. Z. Guben 24: 367. Type locality: [Turkey] Akschehir. Types: "In Anzahl" (syntypes in NHMW and ZFMK).

Lemonia balcanica vashlovani DIDMANIDZE, 1980

Bull. Acad. Sci GeorgSSR 97(2): 453. Type locality: [Georgia] Vashlovan Nature Reserve. Holotype & (by original designation) (GMNT).

Lemonia balcanica cis Zolotuhin, 1994

Zool. Zhurnal 73 (2): 97, fig. 2: 3, 4. Type locality: [Russia, Ciscaucasus] Daghestan, Luchek. Holotype & (ZISP).

References: Romanoff (1885: 12, *Crateronyx*), Radde (1899: 425), Shengelia (1941: 125, 1961: 164, 1966: 150), Didmanidze (1978: 86, 1980: 453, 2005: 29), Didmanidze & al. (2002: 10), Didmanidze & Kvavadze (2006: 118), Zolotuhin (1994: 97).

Range (map 9): From Balkans (Romania, Bulgaria, Greece) and Turkey to Transcaucasus, Great Caucasus and Ciscaucasus.

Comments: This species presents 3 subspecies in Caucasus. The nominate one is known from the coastal line of Adjaria only; the light coloured *L. b. bremeri* (Koleanti, 1846) is native mostly to arid landscapes of the Great Caucasus and Transcaucasus and the larger and contrastingly patterned *L. b. cis* Zolotuhin, 1994 inhabits mountains of Daghestan, Chechnja, Ingushetia and Abkhasia, also is known from northern Talysh. The moths are typical autumn fliers and are on the wings in September to mid October, at altitudes of 350-2480 m. Different Asteraceae, especially with lacteal juice, are host plants. Forms intermediate between *L. b. bremeri* (Koleanti) and *L. b. cis* Zolotuhin, were described as *L. b. vashlovani* Didmanidze, 1980.

Material: Holotype of of Lemonia balcanica vashlovani Didmanidze, 1980, Vashlovan Nature Reserve, 6.X.1973, leg. E. Didmanidze (GMNT); holotype σ of Lemonia balcanica cis Zolotuhin, Daghestan, Luchek, 1.IX.1991, leg. V. Тікнолоv (ZISP); 1 paratype ♂, same, (ZISP); 1 paratype ♂ of L. b. cis Zolotuhin, Dagestan, Achty, 22.VIII.1933, leg. M. RJABOV (KSU); 1 paratype ♀ of L. b. cis Zolotuhin, Dagestan, Achty, 8.IX.1926, leg. M. Rjabov (KSU); 4 ♂♂, 1 ♀, paratypes of L. b. cis Zolotuhin, Dagestan, jug. Tshimrinskij, Ms. Okjuz-Tau, 3000 m, distr. Temir-Chan-Shura, 31.VIII.1940, leg. M. RJABOV (KSU); 1 paratype & of L. b. cis ZOLOTUHIN, Dagestan, pag. Chodzhal-machi (distr. Dargi), 3000 m, 25.IX.1932, leg. N. Egorov (KSU); 1 paratype & of L. b. cis ZOLOTUHIN, Dagestan, Ms. Ihalbuz-dag (pr. Pag. Miskindzhalaj), 5000 m, 26.VIII.1933, leg. M. RJABOV (KSU); 1 paratype of of L. b. cis Zolotuhin, Caucasus oc., Gagry, 5.VII.1908, leg. Dobrovljanskij (KSU); 1 paratype ♀ of L. b. cis Zolotuhin, Daghestan, Shikaz-Chaj (tributary of Samur), 3.IX.1991, leg. V. Тікнолоv (MWM); 2 paratype 🛷 of L. b. cis Zolotuніn, Daghestan, riv. Ak-Samur, vill. Zsakhur, 30. VIII. 1991, leg. V. Tikhonov (ZISP); 1 paratype ♂ of L. b. cis Zolotuhin, same (MWM); 1 ♂, Daghestan, Akhty, 9.IX.1926, M. RJABOV (MWM); 12 & Daghestan, Samur river, Chakh-Chakh vill., 41-30'N, 48-05'E, 700 m, 5.X.2007, leg. V. TIKHONOV (MWM); 1 o, USSR, Checheno-Ingoushetia, NE Caucasus, Torgim, 1000 m, 19.IX.1990, leg. B. Herczig & L. RONKAY (MWM); 2 ord, USSR, Checheno-Ingoushetia, NE Caucasus, Furtoug, 1100 m, 17-21.IX.1990, leg. B. Herczig & L. RONKAY (MWM); 4 37, USSR, Checheno-Ingoushetia, NE Caucasus, vic. Lake Kezenoi-am, 1700-2200 m, 11.-14.IX 1990, leg. B. Herczig & L. Ronkay (MWM); 3 od, Borshom, 1.-20.IX.1899, coll. Romanov (GMNT); 1 od, Borshom, 6.X 1900, coll. Ro-MANOFF (GMNT); 1 ♂, Borshom, 26.VIII.1900, coll. RomanoFF (GMNT); 3 ♂♂, 1 ♀, South Ossetia, Tskhinvali Distr., Aurishevi, 26.VIII.1985, leg. E. DIDMANIDZE (GMNT); 3 od, Shatili, Obratnaja Hevsuretia, 5.IX.1982, leg. E. DIDMANIDZE (GMNT); 1 od, Kahetia, Udabno, IX 1939, leg. D. Tsereteli (GMNT); 1 &, [Turkey] Aresh Caucasus, 7.X.1911, leg. A. Wassilinin (GMNT); 4 °C, Kodjori Caucas, 23.VIII.1908, leg. A. Wassilinin (GMNT); 1 °C, Helenedorf (Samgori), 30.VIII.1910, leg. A. Wassilinin (GMNT); 1 &, Georgia, Vashlovan Reserve, 8.X.1973, leg. E. DIDMANIDZE (GMNT); 4 & &, Georgia, Eldar steppe, 6.-8.X.1973, leg. E. DIDMANIDZE (GMNT); 3 ರಸ, near L. b. cis Zolotuhin, Azerbajian, Talysh, Aurora, 12 km S Lenkoran, 350 m, leg. V. Sinjaev (MWM); 2 or, Azerbajan, Talysh, Kamerkel, 2480 m, 4.-5.IX.1992 (MWM); 2 or, Azerbajan, Talysh, Aurora, 12 km S Lenkoran, 350 m, 25. VIII.-15.IX.1992 (MWM); 1 o, Talysh, Gasmalian, 16.IX.1984, M. DANILEVSKY (MWM); 2 oo, Armenia, Kafansk Distr., vill. Zav, 1400 m, 20.IX., 9.X.1973, leg. V. Murzin (MWM).

Lemonia peilei Rothschild, 1921 (col. pl. 1: 13-14)

Jl. Bombay Nat. Hist. Soc. 28: 174. Type locality: [Iraq, Kizil-Robar, L[eft]. Bank R[iver]. Dayala] "Mirjana, Dayala River". Lectotype & (BMNH).

Lemonia peilei farsica Wiltshire, 1946, Proc. Roy. Ent. Soc. London 15: 118. Type locality: "S. W. Iran, Fars, Pireh-Zan, c. 7000 ft, oak woods". Holotype of (BMNH).

Lemonia pia friedeli Witt, 1979, Z. ArGe. Österr. Ent. 31(1/2): 17, figs 1-4, 19. Type locality: "Asia minor, Gürün". Holotype & (MWM). References: Mirzojan (1982: 92, Lemonia pia Püngl.), Zolotuhin (1994: 99).

Range (Map 10): See comments.

Comments: A very heterogeneous group of separate species that needs special revision using new methods. At least 2 different taxa are known from Caucasus, with serrate medias (*peilei-farsica*-group) and with smooth fasciae (*friedeli-ispira*-group). The members of the latter are often mixed with *L. balcanica* (H.-S.) but are always smaller, with a small, usually point-like discal spot, and with the narrower hind wings with a pointed apex. genitalic characters are not stable and do not help to identify species. Before special molecular investigation is undertaken, the name *L. peilei* ROTHSCHILD will be appropriate for the members of the complex. Bionomics is unknown.

Material: 1 °C, Nakhichevan, Buzgov, 10.X.1970 (MWM); 1 °C, Nakhichevan, Dzhulfa, nearby the geyser, 12.X.1974, leg. E. Didmanidze (GNMT); 3 °C Nakhichevan, Dzhuga near Szhulfa on Arax, leg. M. RJabov (ZISP); 4 °C, Transcaucasia m., Prov. Nachitschevanj, pag. Dzhuga (prope Dzhulfa), fauces fl. Arax, 3.XI.1931, leg. M. RJabov (ZMKU); Transcauc. m., Prov. Nachitschevanj, stat. Negram (ad fl. Arax prope Dzhulfa), 1 °C, 13.X 1931; 5 °C, 16.X 1931; 1 °C, 17.X 1931; 5 °C, Armenia, Khosrov Reserve, 1000 m, 7.-11.X.1974, leg. E. Didmanidze (GNMT); 3 °C, Armenia, Khosrov, 27.-28.IX.1985, P. Kazaryan (MWM); 3 °C, Armenia, env. Megri, 1200 m, 17.X.1974, leg. E. Didmanidze (GNMT); 4 °C, Armenia, env. Megri, 11.X 1974,

leg. A. LISETKIJ (ZMMGU); 1 &, Armenia, Daralagez, 4.XI.1963 (ZISP).

Lemonia ballioni (Christoph, 1888) (col. pl. 1:12)

Crateronyx Ballioni Christoph, 1888, Horae Soc. Ent. Ross. 22: 310. Type locality: [Crimea] "ohnweit Novo-Rossijsk". Type & (ZISP). References: Shengelia (1941:125), Zolotuhin (1994: 96), Stschurov (2007: 279).

Range: Crimea; North-West Caucasus (Tuapse, Anapa, Novorossijsk, Gelendzhik, southern Kuban).

Comments: In southern Kuban it is a rare and very local species. Caterpillars feed on racemes of *Tragopogon* at night and early morning and skulk in the soil during the day. Pupation takes place on the ground in plant detritus without a cocoon. Moths were recorded from late July to early October; eggs are the overwintering stage. Near Gelendzhik, the moths were attracted to light from 22:30 to 00:00 in an air temperature between +15° and +19°C.

Material: 3 ♂♂, Caucasus oc., Tuapse, 1916 (ZMKU); 5 ♂♂, 1 ♀, Gelendzhik, 12.-19.IX.2009, from 600 m, leg. V. Stschurov (coll. V. Stschurov).

Lemonia ponticus Aurivillius, 1894 stat. nov.

L.[emonia] Ballioni var. Ponticus Staud. in litt. [sic!] in: Aurivillius, 1894, Dt. Ent. Z. Iris 7: 188. Type locality: "Armenia". Holotype of by monotypy (RMS).

References: Zolotuhin, 1994: 96 (Lemonia ballioni pontica).

Range: Transcausasus (Armenia, southern Azerbaijan); Turkey.

Comments: Since description, the species was always considered as a subspecies of *Lemonia ballioni* Chr. and this combination has wandered uncritically from one work into the other. At the same time both taxa are from different species groups, and *L. ponticus* Auriv. is a close relative to *L. taraxacilstrigata*. The situation will be considered in detail in a special work (Antoshin & Zolotuhin, in prep.). The species is extremely rare and is known mostly after material from the 19th - early 20th Century, labelled as "Armenia", but without additional details. No data on bionomics available.

Material: Holotype ♂, Armenia (RMS); 2 ♂♂, 1 ♀, Armenia (ZISP); 2 ♂♂, Aserb. mer. (ZISP); 1 ♂, 1 ♀, Armenia, Melik-Sherif, Herbst 1911 (MWM); 3 ♂♂, Pontus, Amasia (ZMKU).

Lemonia dumi (LINNAEUS, 1761)

Phalaena dumi Linnaeus, 1761, Fauna Suecica (Ed. 2): 293. Type locality: Sweden.

References: ZOLOTUHIN (1994: 94).

Range (map 11): transpalaearctic, up to Far East of Russia. Ciscaucasus (Taganrog, Krasnodar Region, Pjatigorsk, Kislovodsk) seems to be the southernmost limit of its area in south Russia.

Comments: This species was recorded in Krasnodar Region (after pers. comm. of V. Stchurov) on grass meadows in a *Carpinus-Quercus* forest on the southern slope at an altitude of 1350 m on 20.-21.X.2007 flying in sunshine. Bionomics on Ciscaucasus is unknown.

Material: 1 °, Northern Caucasus, Ekaterinodar, leg. Vorobejev (ZMMGU); 1 °, Ciscaucasus, Pjatigorsk (cimeterium), 21.X.1931, leg. N. Jegorov (ZMKU); 1 °, Ciscaucasia, Kislovodsk (circuitus), 23.X.1925, leg. N. Jegorov (ZMKU); 1 °, Northern Caucasus, Krasnodar Region, Guama gorge, nearby vill. Mezmay, 1350 m, 20.-21.X.2007, leg. V. Stchurov (after photo examined).

Brahmaeidae

Brahmaea WALKER, 1855, List Spec. lep. Ins. Colln. Br. Mus. 5: 1200.

Type-species: Brahmaea conchifera Butler, 1880, Ann. Mag. Nat. Hist. (5) 5: 188, by subsequent designation by Kirby (1892), Syn. Cat. Lepid. Het. 1: 724, a junior subjective synonym of Bombyx walichii Gray, 1831, Zool. Misc. (1): 39.

Brahmaea ledereri Rogenhofer, [1873] 1874

Verh. zool.-bot. Ges. Wien 23: 569-574. Type locality: "cilicischen Taurus" [not found].

Brahmaea christophi Staudinger, 1879, Horae Soc. Ent. Ross. 14: 360. Type locality: "bei den heißen Quellen bei Lenkoran". Types: (ZHUB) [examined].

References: Romanoff (1885: 13, *Brahmaea* Wlk. *Lumulata* Brem. var. *Christophi* Stgr.), Nässig (1980: 84), Mirzojan (1977, 1982: 88) de Freina (1982: 20, 1982a: 131, fig. 7, 1985: 78), Didmanidze (1987: 212, 2005: 11), Didmanidze & Kvavadze (2006: 7).

Range (map 12): in some local relict populations is known from northern Iran (Mazandaran, Elburs: Kendevan) and Azerbajan: Talysh (ssp. *ledereri* Rogenhofer, [1873] 1874), south-western Georgia and north-western Turkey (ssp. *christophi* Staudinger, 1879) and Turkish Kurdistan (ssp. *zaba* de Freina, 1982).

Comments: Taxonomic score of the species is not quite clear. Some authors considered *ledereri* Rogenhofer, and *christophi* Staudinger, to be different species, others regard them as subspecies. We here follow de Freina (1982) and consider them as conspecific, with 2 local populations attributed to different subspecies. *B. chr. ledereri* Rogenhofer, was reared in Turkey from caterpillars feeding on *Phillyrea latifolia* (Korb, 1899). In Georgia it was observed from Colchic Lowland where the caterpillars feed on *Phyllirea* [sic!] *vilmoriniana* (Didmanidze, 2005: 11). The subspecies is extremely local and is on the wing in April. Another subspecies, *christophi* Staudinger, is local and restricted to the humid lowland of Talysh in SE Azerbajan, but it is not so rare, occasionally just common in April. Romanoff (1885) wrote about the caterpillars of the subspecies found by Lenkoran "La chenille se nourrit d'une espèce de frène [Fraxinus]". In captivity the caterpillars of both subspecies accept *Ligustrum* as a host.

Material: 3 & Azerbajan, Talysh, 15 km W Masalli, e.l. 10.-15.V.2006, leg. V. Tikhonov (MWM); 4 males, Lenkoran (MWM); 1 & Azerbajan, Talysh, Lenkoran forest, 13.IV.1974, leg. E. DIDMANIDZE (GNMT); 1 & Azerbajan, Talysh, Lenkoran forest near water reservoir, 17.IV.1974, leg. E. DIDMANIDZE (GNMT); 1 & Caucasus m. (ZMKU).

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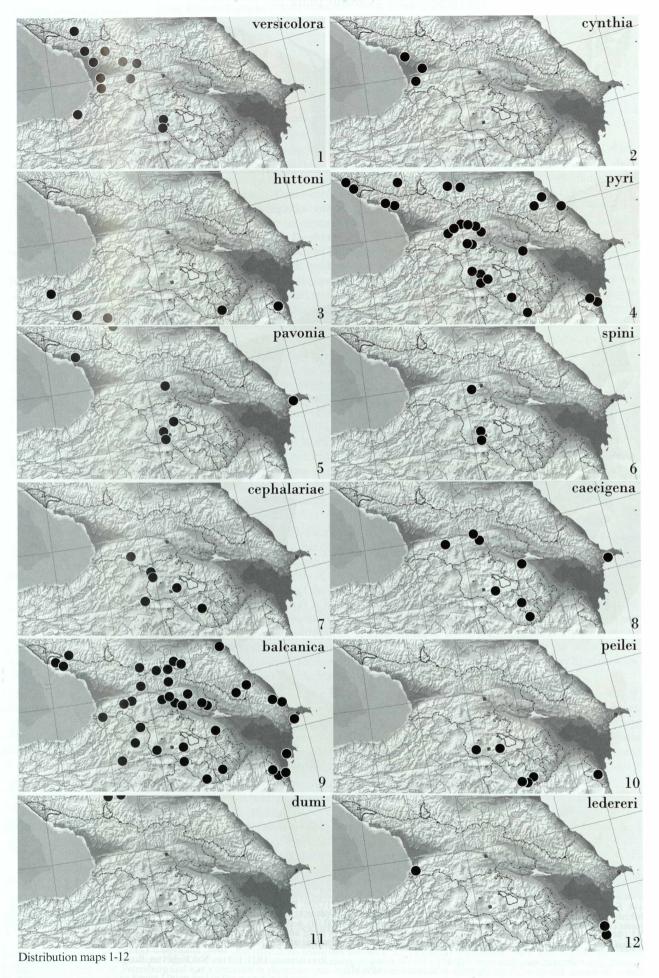
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Addresses of the authors

VADIM V. ZOLOTUHIN
Department of Zoology
State Pedagogical University of Uljanovsk
pl. 100-letia Lenina 4
RUSSIA-432700 Uljanovsk
e-mail: v.zolot@mail.ru

ETERI A. DIDMANIDZE & VALERY A. PETROV
Department of Zoology
SIMON JANASHIA Museum
Georgian national Museum
Purtseladze str. 3, Tbilisi, 0105, Georgia;
e-mail: e_didmanidze@yahoo.com



Colour plate 1



1-4: Endromis versicolora eichleri Alberti, 1975: (1) holotype & (ZSM) (2) &, Borshom, 2.-18.IV.1902, coll. Romanoff (GNMT), (3) &, Meshikedi, Kintrishi, Adjaria, 2.VII.1974, leg. E. Didmanidze (GNMT), (4) &, &, Borshom, 2.-18.IV.1902, coll. Romanoff (GNMT), 5: Perisomena caecigena transcaucasica O. Bang-Haas, 1927, (holo)type & (ZHUB). 6: Samia cynthia (Drury, 1773), &, Georgia, Tsulukidze, 13.-15. VI.1940, leg. A. Vashakidze (GNMT). 7: Eudia pavonia meridionalis natio abchasica Sheliuzhko, 1943, holotype & (ZMKU). 8: Saturnia cephalariae Christoph, 1885, lectotype & (ZISP). 9: Lemonia balcanica anatolica Wagner, 1931, Type & (NHMW). 10: Lemonia balcanica vashlovani Didmanidze, 1980, holotype & (GMNT). 11: Lemonia palaenica cis Zolotuhin, 1994, holotype & (ZISP). 12: Lemonia ponticus Aurivillius, 1894 stat. nov., holotype & (RMS). 13, 14: Lemonia peilei Rothschild, 1921: (13) &, Nakhichevan, Buzgov, 10.X.1970 (MWM), (14) &, Armenia, Khosrov, 27.-28.IX.1985, P. Kazaryan (MWM).